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ABSTRACT

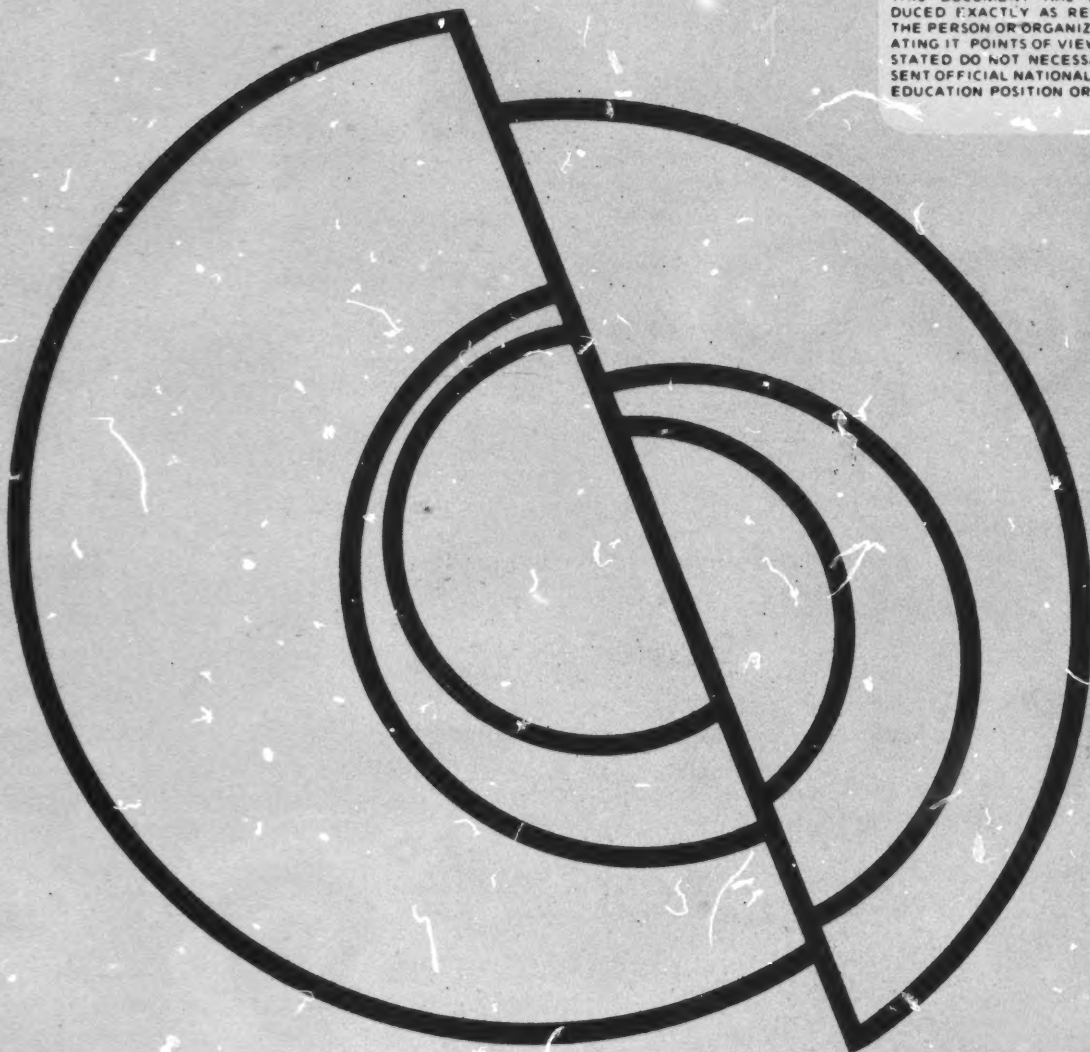
Futures Information Interchange Newsletters contain practical teaching methods and learning activities for introducing future studies into the classroom. Although the newsletter is directed toward elementary and secondary teachers, it is intended to be of value to educators at the preschool and university levels also. Lead articles define the role of a futurist, examine the skills necessary to fill that role, and discuss how those skills can be taught. Additional articles contain a future-cognition questionnaire, a war/peace learning experience designed for a class of approximately 30 junior and senior high students, and creative activities for future studies courses. Activities to help students plan their personal life and expand the realm of the possible, techniques for introducing the metric system, and a curriculum process for teachers to follow when developing a future-oriented curricula are also included. (Author/RM)

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FUTURES INFORMATION INTERCHANGE

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SCHOOL OF EDUCATION
UNIVERSITY OF MASSACHUSETTS AT AMHERST

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* * * * *

The Future Studies Program is searching for interested undergraduate and graduate students for 1976 admissions into the Program. Applicants should apply through the University.

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The Futures Information Interchange Newsletter is a collection of practical teaching methods and learning activities for introducing future studies into the classroom. Although the newsletter is directed toward primary and secondary school teachers, it is intended to be of value to educators at the pre-school and university levels also. Unfortunately, due to rising costs, this issue of the Future Information Interchange Newsletter will be the last available for free. Beginning with our Spring issue, the F.I.I. will be available for 50¢ (which includes postage and handling). We have cut production costs this issue by substituting a single spaced for our previous doubled spaced format. Contributions to the Newsletter: the newsletter staff welcomes any specific materials related to your future-oriented work in the classroom that you would like to interchange.

Vol. III

No. 1

December 1975

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Future Studies Program, 1975

MAY 31 1976

We of the Futures Studies Program at the University of Massachusetts have spent this fall wrestling with three questions. First, what is a futurist's defining role? Second, what skills are required to fill that role? Third, how can these skills be taught? The following section is a summary of our conclusions.

Our Definition of a "Futurist"

The initial question at first seemed trivial. We all knew what a futurist is, or so we thought until we tried to form a definition. We began by listing attributes we variously found desirable in a futurist such as "holistic," "analytical," "humanistic," "scientific," "optimistic," and "pessimistic." But such terms often contradicted one another, and could be used to define people in many non-futuristic disciplines.

An attempt to define futurists as a hybrid of existing disciplines such as sociology, systems theory, and statistics, failed. For though we agree that futurists draw on the techniques of other disciplines, it seemed to us that they had an entirely separate role or purpose.

Thus, we developed the following definition: "A futurist is someone who makes possible futures more real for others." Where there is not yet an image for a part of the future, the futurist makes one. Where one already exists, he/she improves and clarifies it. He/she provides pictures of the possibilities from which we can pick, explores the "game-tree," sweeps the radar screen, sketches in the uncharted parts of the map. However we phrase it, the futurist's function remains the same, to "reify" the future possibilities for others - to make them "more real."

All who call themselves "futurists" fit our definition. Whether they be scientific forecasters or intuitive visionaries, systems analysts or social analysts, engineers, or poets, they all serve to "make future possibilities more real for others."

In fact, by our definition everyone in the world is at least occasionally a "futurist," whether planning a family vacation or advising a child. Some, like the producers of Star Trek, may have more impact than many who call themselves "futurists." So we have defined a "professional futurist" as one whose primary endeavor is to make future possibilities more real for others.

This "reification" is a spiral process. First, futurists hypostasize present trends as future possibilities. With the materials of the present they construct futures, hypothetical realities. Once they have made these hypothetical realities more concrete, "more real," they can bring them back to the present for our present manipulation. They offer us symbols of what is not yet. Those symbols allow us to plan and assure us of continuity as we literally "make our way" from one present to the next.

This "reification" is an important social process. Sociologists of knowledge like Peter Berger and Thomas Kuhn have described the way our views of reality are largely socially constructed. Each person is raised to see the world through his/her culture's lenses, operates on that view where ef-

fective, slightly alters the view where ineffective, confirms the altered view with others, and raises his/her children with the view at hand. Mutual agreement to these views allows us to predict one another's behaviors, and to reduce the anxiety in choosing our own.

However, these mutually agreed upon views risk being narrow or based on untested premises. Changing circumstances may prove the views to be incomplete, and force painful adaptation.

The futurist helps prevent discontinuities by anticipating the changing circumstances and suggesting to society alternative ways it might adapt. Without such alternative images of what "reality" could be in the future, society would have no choice but to act on its present view of reality until that view proves deficient. Thus, by "making future possibilities more real for others," futurists provide materials necessary for societal evolution.

Thus, the ultimate role of futurists is to assure society the ability to renew its images of the future. Those images will be only as diverse as the variety of imagination called on and only as energizing as the extent to which they arise from and are accepted by society at large.

This highlights the important educational role for futurists. Not only must they develop in themselves the skills required to "make future possibilities more real for others," they must also teach those skills to others, creating a "chain-letter" effect so that the ability to think futuristically spreads through society at large. This will increase society's ability to renew its images of the future and to choose among them in a responsive and adaptive way.

We hope our attempts to define a futurist will prove useful. We have felt that, by identifying our central role, we have been unburdened of the expectations of filling peripheral ones. No longer do we need to pretend to be experts in all disciplines, so long as we know how to tap those disciplines to fill our own role.

Our definition of the futurist's role contains three components. First, a futurist is concerned with "future possibilities." A measure of a futurist is the extent to which he expands and clarifies the multiplicity of possibilities. Second, it is "for others" that a futurist makes possibilities more real. He/she must communicate. Third, to "make more real" that unreal, abstract land called the future is the special task of the futurist. A futurist has succeeded when he/she has materialized a mental vision into a concrete comprehensive form which others experience as plausible, as a "real" possibility.

"On Making Future Possibilities More Real For Others"

by

Bob Kahn

We have defined the futurist as one who makes future possibilities more real for others. If pursuing it professionally, how then does one go about it? What does the futurist need to know to futurize? What does he or she do? We determined several competencies which are entailed: inventing and discerning future possibilities, making those possibilities comprehensive, and therefore convincing, and finally, effectively relating these possibilities to others.

The futurist begins with the conceptual invention of possibilities. He or she conceives new futures or builds upon futures formerly overlooked or misunderstood. Pablo Soler's Arcosanti is an example of a new possibility, in this case, an urban future of gargantuan megastructural cities rising thousands of feet into the air, designed to shelter hundreds of thousands (in some "arcologies" millions) of people under a single roof. Philip Slater in his book EARTHWALK, questions our society's preoccupation with rationality and objectivity, pointing out in powerful argument the hidden costs of the West's scientific-technological-industrial quest. Slater offers up the future possibility, that our society search out its motivating drives and confront them rather than continuing to make causal trade-offs as if we are getting power and security for nothing. Were we to follow Slater's advice, the future of the West, indeed of Earth, would be radically different. From Gerard O'Neill, champion of large, self-supporting space colonies (by 1990), to Ivan Illich's transportation system centered on the bicycle, to Medard Gabel and Earth Metabolic Design's proposed global hydrogen economy, future possibilities, unique or previously passed over, are articulated and made part of our collective intellectual environment. These ideas are added to the hopper of possibilities, and society thereby gains additional options.

The futurist does not operate under the intellectual constraints typical of the academic world. Were she or he to do so, their visions would be short circuited considerably. Intuitive thinking is emphasized before critical thinking, at least in the invention stage of futurizing. Academic thought, emphasizing evaluation and criticism could relegate creative future imaging to defensive peeks about tomorrow's corner. The futurist seeks critical feedback only after he or she has articulated a particular future and even then under slightly different constraints. Plausibility comes before "perfect" logic.

An associated aspect of the futurist's forging of possibilities is that much of his or her attention is focused on the global level. The futurist understands the true dimensions of seemingly isolated developments in an interdependent world.

As early as 1961, E. F. Schumacher appreciated the full implications of Great Britain's conversion from a coal to oil based fuel economy. He warned (in part) that relying exclusively on a receding, nonindigenous, finite resource such as oil could dangerously escalate world tensions; war might be the result perhaps in the next decade. Britain would be at the absolute mercy of the Arab states, Schumacher warned. The overlap of globalists and futurists is considerable. John McHale, Buckminster Fuller, Richard Falk, Garret Hardin, Robert Jungk, Ken Boulding, Victor Ferkiss... many others also come to mind. The futurist realizes that much of a particular society's future will be closely linked to global developments. Such diverse concerns as food production, pollution control, materials and fuel supply, crime, all hinge on transnational interfaces. It behooves the futurist to explore the global context and develop possible solutions to global problems. Many do.

The futurist is at home in using the forecasting methodologies such as future trees, delphi, and cross-impact matrices. Furthermore, he or she can employ the math used in extrapolations. Likewise, computer applications are not foreign to the futurist. For example, the futurist is prepared to participate or evaluate reports like those produced by Rand, the Hudson Institute, or Club of Rome which often rely on computer assistance in reaching their forecasts.

In addition to being comfortable in using and evaluating the quasi-objective and mathematical techniques of forecasting and technological assessment, the futurist is able to relate several implications of a given trend. Once determining that if the birth rate of Chad continues to rise at current yearly rates, that country's population will double in 20 years (involving routine calculus) the futurist would then speculate on several possible repercussions of such a development. Of course, in this case, as in many others, meaningful speculation cannot be reached by considering a single factor in isolation. So for this more subjective forecasting, a different set of conceptual skills is called for--wholistic thinking. This brings us to the second overall competency of the futurist, the ability to make possibilities comprehensive and thereby plausible.

To be believable a future image or scenario needs to be comprehensive. It parts must hang together as a plausible whole. A forecast of a (comparatively) energy poor U.S. which left the interstates as busy as ever won't stick. Good fiction succeeds when the reader surrenders his or her present reality for one contrived. The "suspension of disbelief" is accomplished only if the replacement is a "sensible" as present reality. Futuristics is confronted with a similar challenge. Above all, the future image should be comprehensive.

In a mundane and seemingly innocuous example, we might get a feel for the difficulty of making possibilities comprehensive. What would be the implications if every American stopped eating breakfast? Well, farm land, equipment, capital, and labor would be available for other uses. But if production went on as before while consumption dropped by a third, the volume of unwanted food stuffs reaching market would be overwhelming. If the goods were not exported, everyone in the food production sector from the egg farmer to the grocery stock-boy would be adversely affected as prices dropped. If exported, U.S. Balance of Payments could be boosted assuming the additional food stuffs did not so swamp the foreign markets as to be virtually valueless. If production was cut back then everyone from the worker in the John Deere plant to the copywriter in the advertising firm with the General Foods-Cheerios contract would be hurt. These kinds of ripple effects are all too familiar to us in the midst of the current recession. The complex interrelations of even a seemingly harmless matter are profound and difficult to comprehend.

General systems theory is one conceptual tool which can help in gaining leverage on these complex issues. It ought to be in the tool chest of every futurist who seeks to make future images comprehensive. Beginning with wholes, the systems thinker studies a particular system in its proper context, i.e., the larger system of which it is a part, and the sub-systems which comprise it.

The arrival of general systems theory came as the generalist's role was at a low in comparison to the specialist. At the beginning of this century, we emphasized expertise which came to mean knowing increasingly more about increasingly less. We believed that our experts when brought together would supply the best possible answers to our problems. Yet in actuality, experts rarely communicate substantively to one another across disciplines let alone cooperate. To borrow a favorite example of Russel Ackoff, a renown systemist, Western society's fallacy is like that of the creator of the "perfect auto," who after including the very best parts in the make-up of his prototype: BMW, Volvo, Mercedes, Jaguar discovered to his dismay that the car would not run because he hadn't given thought to the part's associated performance.

In our age of specialization, the futurist is a generalist. He or she would know a great deal of ecology, cybernetics, social psychology, political economy, anthropology, psychology, ethics along with general systems theory. The futurist would be able to synthesize from these disciplines in making future possibilities comprehensive.

This brings us to another aspect of the futurist's second major competency, a familiarity with planning methodologies. Though not necessarily a planner per se, the futurist should be able to articulate futures from a planning perspective. He or she should be able to point out paths of action required to move toward a given future. For instance, if the future image of world peace is to be convincing, one or more scenarios of how the Earth might reach this long-hoped-for-dream should be included. How do we get from here to there is a key question, and the futurist should propose one or several paths.

A final aspect of the futurist's ability to relate believable, comprehensive future images is that he or she must make all assumptions clear. If values clarification is called for, the futurist is ready to "show his hand." By doing so, the futurist is able to reveal the origins of a given future by relating the personal values, motivations, and assumptions out of which such an image arises.

Having invented a future possibility and made it real, the futurist must then communicate that possibility to others. Ultimately, his or her contribution to society as a futurist is contingent on the third competency, effective communication.

The nature of the typical futurist message is particularly difficult to communicate since most information in the "future tense," is abstract. Relating the weatherman's forecast for tomorrow to someone is relatively easy. If you say that rain is 70-80% likely, that prediction is tangible; it is directly relevant to previous experience. But informing the same person of the long range climatological changes anticipated by authorities in the field is a very different matter. The later message is more difficult to communicate because it is distant in both space and time. The information is only dimly experiential, if it is at all. The futurist's challenge, to meaningfully communicate abstract messages, is no easy task.

An effective communicator always begins with understanding the audience. What are their interests? Their backgrounds? Are they listening? Do they care about the information I am trying to convey? What sort of presentation will most effectively get my point across? No matter what the content of the message or nature of the medium of communication, these and like questions need answers. Understanding the audience need not necessarily mean catering to it, but the communicator must be able to gauge the verbal and nonverbal feedback coming from the audience.

The mysterious "good teacher" (and we have all had at least one) understands his or her audience. The writer who draws us into the story we're reading surely knows the audience. Successful politicians and advertisers are superb at this though they usually tend to underestimate the public.

The futurist, in conveying future possibilities, needs certain communication skills, either in speech, print, electronic media, and so on. Alvin

Toffler comes immediately to mind as someone who has effectively communicated a future concept, indeed futurism as a whole. "Future Shock" is a household concept. Ed Cornish, of the World Future Society, has been an effective conveyor of futurist ideas indirectly through his creation of that umbrella organization. The builders of geodesic domes and solar heated dwellings have been effective communicators of shelter alternatives for the future. Their creation of tangible, physical structures has had powerful impact. Finally, consider the example of the writers of Science Fiction. From Star Trek to the many SciFi magazines, these futurists have been dramatically effective in communicating possible futures to people of all walks of life and manner of education.

The three competencies of the futurist are closely intertwined. Inventing future possibilities--making them real--for others, each element is contingent upon the other. As a package, the unique, well developed and communicated future image is of profound value to society.

Imaging
by
Duane Dale

We have defined the task of the futurist as "making images of the future more real for other people." One way to make future images more real for people is to involve them in making the images.

The tendency today is for futures invention to be the domain of an elite: analysts at the RAND Corporation or the Hudson Institute, planners at City Hall, executives of major corporations have already made decisions which will be affecting our lives in 1990. Most futurist educators are committed to the goal of democratizing the process of imaging alternative futures.

There are skills--teachable skills--which can enable the average citizen to become more competent at envisioning future alternatives. In fact, the citizen, unconstrained by bureaucratic vested interests, has the potential of becoming a better image-maker than the professional planners.

The task of the future-oriented teacher is really the same as the task of the director of a team of problem-solving consultants: to give instructions and create an environment which will lead to creative, effective invention of alternative futures. The instructions do not have to be complex. For example:

- . Write ten headlines for the year you turn 30.
- . Sketch the device which will take you to work at age 45.
- . Write a short science-fiction story about life on a space station.

In these examples, the teacher has defined the problem and the medium for imaging; the methods for generating the "answers" are left up to the student's intuition. There are methods of creative problem-solving which make the steps in the creative process more refined and explicit. One rule of thumb goes like this:

- . Study the situation thoroughly; become immersed in the facts of the situation.
- . Manipulate the facts, figures, and ideas; make models; play with the problem.

- . Leave it be; go away from the problem. Leave time for the creative process to work, for the spark of an idea to strike.

This is useful, but we can do better. Consider the starting points for new images of the future:

- . A problem; a personal dissatisfaction, or someone else's.
- . Analysis of the qualities of that which is; awareness of the possible dimensions of change. For instance, Buckminster Fuller observed early in his life that most buildings use the rectangle as their basic geometric unit. From musing how the triangle, with its inherent stability, might better used as the basis of architecture, he eventually invented the geodesic dome.
- . Review of existing alternatives (e.g., How many games do you know that two people can play?); exploration of the possibility that new ones can be invented and added to the list. (Robert F. Kennedy was fond of quoting George Bernard Shaw: "Some people look at what is and wonder 'Why?' I prefer to think of what could be and ask, 'Why not?'")

From starting points such as these, a variety of classroom procedures can help students to utilize or develop their creative potential. The first of these is problem definition.

- Q: What's the real problem here? (should be repeated many times to get to the essence of the situation which we want to image alternatives for.)
- Q: Are there parts to the problem? Problems within the problem?
- Q: What are the key words in the problem? Can you state the problem using only the key words?

The importance of this sort of thinking is best illustrated by an example. A team of engineers wanted to invent a better can-opener. As long as they tried to think of "a tool for making a hole in a can," they could only come up with minor variations on the familiar "church-key." Once they stated the problem, "How to get the contents out of a can?," they generated a large number of possible solutions, and eventually came up with the pop-top can. Perhaps if they had looked for "a way to get the contents out of a can, without leaving stray pieces of sharp metal," we would not have the pop-top tabs scattered over our countryside.

A good problem statement is really half-way to the solution; if you settle for the initial statement of the problem, you are unlikely to come up with any novel ideas. Once you (and your class) have explored alternative ways to look at a problem, you are ready to choose from a variety of "next steps."

- . Brainstorming: Restate the problem. Set a time limit (5 or 10 minutes). Ask for as many solutions as possible; encourage tagging on to other people's ideas. No criticism of far-out ideas and no evaluation. Write the ideas large enough for all to see.

- . Manipulate the present situation, using a list of verbs as a guide: magnify, minify, rearrange, alter, rotate, flatten, lighten, integrate, dissect, etc. Make up a list of words more appropriate to your problem; the ones here work best on physical design ("school building of the future"), but can also be used for abstract ideas ("election of the president").
- . Name all the parts and qualities of the thing you're imaging alternatives for. List all the alternatives you can think of for each quality. Then start combining the Attributes (like making faces with "Changeable Charlie" blocks) and see if any interesting ones emerge.

Once a variety of images have been discovered, it is then appropriate to return to techniques such as story-writing, sketching, and also model-building to develop these images. In the process of giving tangible shape to ideas, students may find that it's possible to combine the best of several ideas into one.

- . What will it look like?
- . What will it feel like to live in such a situation? (Not only for the student, but for people from other cultures or classes).
- . What would it be like if the image becomes reality AND
 - . Martians land?
 - . It's a rainy day?
 - . Babies come from test tubes?
 - . etc.

Textbook authors seem to assume that one can teach students how to understand their world, to analyze, to interpret, but not to create alternative visions. Yet, it is possible to develop creativity. The process of invention is not only at the heart of future studies; it is what's being demanded by the many who call for "relevant education." Problem-solving and creativity are the essence of relevance.

We especially need to help our students develop their imaginations about social arrangements. It is cliched but still true that our success in inventing technological hardware has outpaced our ability to imagine new social arrangements which cope with the problems our technology creates. We need social inventions which provide solutions to unemployment caused by automation, education, which is outdated before it is even used, and other social problems.

The task is not easy; most teacher education programs do not deal with creativity. The following books may help:

- . The Universal Traveler by Don Kober and Jim Bagnall. Wm. Kauffman, 1974. Ppbk. \$3.95. Very good at presenting specific techniques for analysis; problem definition; idea-generation development, and selection; implementing, evaluating, and communicating.
- . The Creative Behavior Guidebook and Workbook, by Sidney Parnes. Many exercises suitable for the classroom.

- . Experiences in Visual Thinking, by Robert H. McKim, claims that visual thinking will give a different set of solutions than the verbal mode. Presents theory, exercises, and examples which could provide the basis for a lesson, unit, or entire course. Relevant not only to sketching and model-building, but also to the entire problem-solving process.
- . A theoretical background is provided by: Gordon, Wm. J. J. Synectics. The process of "making the familiar strange and the strange familiar" is the key to the synectics approach to creativity.
- . DeBono, Edward: New Think; the Use of Lateral Thinking. ALSO: The Five-Day Course in Thinking. Stresses the value of going beyond one's starting assumptions and developing new and unique approaches to solving particular problems.

The "Open and Closed" Dimension of Future Time Perspective
Jake Plante

Introduction

Intrinsic to any explanation of foresight capability or what makes a good futurist is a discussion of people's "open and closed" reference toward future-time. That is, the degree to which a person believes that luck, chance or a predetermined set of forces (closed) are responsible for the outcome of events versus how much she/he believes that events are affected by human effort and personal decision-making (open). A major premise behind Future Studies is the belief that while there are many natural laws and limitations to which we ultimately conform, there exists a great deal of human freedom to affect and select the course of personal and social events.

A closed outlook which is comprised of 1) inattention to the future (nil), 2) a non-causal, incidental view of events (random), and/or 3) a notion of predestiny and fate (fixed), is considered detrimental to an individual's social-psychological development and being a good futurist. On the other hand, an open outlook which is comprised of 1) thought and concern about tomorrow (active), 2) a view that many things are possible (plural), and 3) a belief that we have a "voice" in what happens (volitive), is considered conducive to the social-psychological development of an individual. Without these "open" attitudes many important human activities would cease and self-defeating passivism would block our commitments to self-growth, social responsibility, and community participation.

The Future-Cognition Questionnaire

The following 30-item questionnaire is designed to explore human personality in relation to the 6 aspects of the "open and closed variable" mentioned above. Directions: Hand out copies of the questionnaire to your students. Ask them to read each question and decide their personal preference; then circle the appropriate letter. Circle "A" if they agree or tend to agree with the statement, "D" if they disagree or tend to disagree with it. No time limit is necessary, however, respondent's need not linger over any particular question. You should be available to answer (privately) any question a student may have about a certain word or statement. As an additional measure, you might ask students to write a sentence or two on the back of the questionnaire describing how they felt about it.

Future-Cognition Questionnaire

Name _____

- A D 1. It doesn't help me a lot to think about the future.
- A D 2. I believe that many alternatives exist for me and that almost anything is possible.
- A D 3. I believe that what is going to happen will happen.
- A D 4. Individuals make a considerable difference in the course of history.
- A D 5. The future is completely unpredictable.
- A D 6. Many things happen because they are fated or predetermined.
- A D 7. I believe that planning is essential for making things come about.
- A D 8. Luck has a lot to do with the outcome of events.
- A D 9. Some people are born to be successful and others are born losers.
- A D 10. I believe that, by and large, the future cannot change and that very little is possible.
- A D 11. I live each day as it comes without concerning myself about tomorrow.
- A D 12. The future is "open" and subject to move in any number of directions.
- A D 13. Our misfortunes are the result of our mistakes.
- A D 14. My future will be shaped by forces outside of my control.
- A D 15. Most events occur by surprise with little cause or forewarning.
- A D 16. Hereditary (family background, sex, race, height, etc.) and environmental factors will not, for the most part, determine what I become.
- A D 17. The future is created, more so than not, by the choices that people make.
- A D 18. I believe that many things (for example, meeting a certain person) are inevitable and will surely happen.
- A D 19. I often think about what the future will be like.
- A D 20. Most things which happen to me are because of chance.
- A D 21. I believe that my horoscope can predict what will happen to me.
- A D 22. It is possible for me to influence and change the direction of society.
- A D 23. I do not believe that there is a destiny or inherent fortune to my life.
- A D 24. Even though the future holds many unknowns and uncertainties about the future, my thoughts about it are a very important factor in my intended behavior.
- A D 25. Every event imaginable could happen in the future.
- A D 26. Most things which will happen to me, will be because of what I do, or do not do.
- A D 27. I believe that my life is willed and guided by a special force or being.
- A D 28. Contrary to common folklore, flipping a coin is not a good way to reach decisions.
- A D 29. Planning does very little good because things will happen regardless.
- A D 30. Choose (by circling its letter) one of the following 4 metaphors which most applies to your way of thinking:
- a. The future is like the night; it eludes our vision and cannot be seen.
- b. The future is like a tree; each branch is a choice of direction, each leaf a possible outcome.

- c. The future is like a road; a chartered course we journey along.
- d. The future is like a game of cards; chance determines the dynamics of play and outcome.

Scoring the questionnaire: Responses indicating an open outlook are: Agree: numbers 2, 4, 7, 12, 13, 16, 17, 19, 22, 23, 24, 26, 28, and "b" metaphor. Disagree: All remaining numbers.

Processing the Results

There are numerous ways to "process" a questionnaire of this sort. I suggest the following: After students have completed the questionnaire, initiate a general discussion centered around 1) the questionnaire itself, and 2) the 6 aspects of the open and closed dimension of future time perspective. (Other dimensions, for example, would be short-term vs. long-term and optimism vs. pessimism.) As circumstances permit, have the class conduct an item-by-item analysis in order to determine what each question was attempting to measure. As a particular question is discussed, ask for representative opinions for each response.

I strongly urge that, whenever possible, the "open and closed measure" be applied to other subjects of concern to your class. As part of this effort, you might incorporate into the above discussion broader kinds of questions (these will, of course, depend upon the nature of your class) such as: Could World War II have been avoided? (History) Who will be the next President of the United States? (Social Studies) Was Shakespeare meant to become a great author and playwright? (English) and How do meteorologists approach weather forecasting? (Science).

Teaching Futures Concepts

by

Al Peakes

A good many of the social positives and great numbers of the problems of society are inextricably tied to trends that are undergoing exponential growth. As one can readily see from the media, questions of growth are perhaps the most profound problems facing us. Unless students understand growth and how it works, they will be unable to cope intelligently with these issues either today or tomorrow. The following exercise represents one of the better known examples of exponential growth.

The Problem With Pond Lillies

Commence with a story (spelled out in The Limits To Growth): There's a farmer who has a pond, and the pond contains a lilly plant which doubles in size each day. It will take the plants thirty days to completely fill up the pond, and the farmer doesn't want that because the plants will die and rot and make a big mess and choke the rest of the pond. The farmer wants to cut the plant back before that happens, so his question is, "On what day will the lilly plant half fill the pond?"

If one of your students gives a correct answer (the 29th day) fairly quickly, you may well have a majority response of "I don't understand" from

the rest of the class. Have the student who comes up with the correct answer spell it out to the rest. If, as is very likely, the pupils throw out several figures, simply as guesses, pick out one of them (e.g., 15) and ask the student, "Well, if the pond is half full on the 15th day, and the plant doubles in size every day, how full will the pond be on the sixteenth day?" This usually gets the point across.

Next you should give out graph paper (preferably four to the inch) and have each student mark off a big square with 32 of the small squares on each side. This 32 x 32 area represents the pond in which the lilly plant is growing. Now ask your pupils, "If the lilly plant completely fills the pond on the 30th day, how many of the small squares did it occupy on the 20th day?" Ask for guesses before working it out.

A neat way of arriving at a solution is to work backwards. First divide the pond in half and label one half "30." This is the part added on the last day. Then divide the remaining half in half again and label one piece of that "29." Continue along like this, dividing the unlabelled half of each segment in half again until you reach the number 21. The remaining portion will be a single minute square, the total size of the plant on the 20th day.

At this point, compare with the initial guesses. Now, ask your class to make believe they're the farmer and that after watching the plant grow for twenty days and seeing it fill only a small corner of the pond, if they wouldn't be likely to go and do something else and forget about the dumb plant for ten days without concern of the pond being overgrown. The point is hopefully driven home: That the suddenness with which exponential curves reach their limits play tricks on human psychology unless we are aware of the effects of these kinds of situations.

Curricular Experiences: Abstractions for Real

Bob Kahn

The rationale behind these curricular ideas is very old: the more experiential the learning, the better. The games and simulations which are now commonplace in our schools follow from this rationale. They move learning further along the continuum into the experiential realm. Yet, because they are presented as games or simulations, they are incomplete reflections of the experiential imperative.

While it is true that a simulation can approximate the actual intensity of a real world experience, its participants always remain aware that they are playing. No matter how involved a group might be in playing Monopoly (which is often very intense) everyone knows that the money isn't real, and this inevitably leaves some of the bite out of the experience.

The following curricular ideas were designed to be free of any "play money." They are presented as real, and are to be so taken. By tying the experience in a Machiavellian fashion, to the reward and punishment criteria of the traditional classroom, we hope that the abstractions of War and Peace and Exponential Growth Rates will be as intimately experienced by the students as is possible in a classroom setting.

Curriculum Course

A classroom structure to simulate the following:

Human beings doing something(s) which seem(s) pleasant or innocuous but whose long-term effects catch up with them. Hopefully, the mere knowledge of long-term effects (in the simulation) will not, in itself, be enough to prevent the ill-effects.

Begin with ten students in a fifteen week (one meeting per week) class. Each class session involves reading an article (in class) and taking a quiz on that article. Grades are based on scores on the quizzes. Students check out their reading materials from the instructor, and every time an article is checked out, one imaginary student is created who checks out an article each week for the rest of class. Further, every time an imaginary student checks out an article, s/he creates another imaginary student. Imaginary students have priority over real students in getting copies of articles.

The instructor informs the students, at the start, that there are only 16,384 (215) copies of each article available. Unless students check out only one copy of each article each week to share among the ten of them, they will not have enough copies of the final week's articles.

War/Peace Learning Experience (designed for a class of approximately thirty students; Jr. and Sr. high)

The teacher announces that an "exam" will be held in two weeks which will cover the material so far studied in the course. The teacher explains that the test will count for a considerable amount of the final grade in the entire course (perhaps as much as 50%).

The teacher next explains that the test will be experimental. Dividing the class (seemingly spontaneously but carefully dividing talented students equally) in half, the teacher explains that the grade of the low scoring person in each group on the exam will count for the entire group. The teacher adds that in the forthcoming two weeks, time will be set aside for group study and tutoring of some students by others, etc. (In this interim period before the test, the teacher can help the group forge an identity in a variety of ways.)

Several days before the "test" itself, the teacher relates exactly how the test is to be conducted. The test itself will be a competition on the "College Bowl" model. The two sections of the class will compete to which team can respond correctly to the teacher's question first. (This can be done by a raising of hands or another method.) The team which first scores a hundred points (each correct answer is worth four points) receives A's. The losers fail. Each time a team answers correctly, the opposing team loses a member (selected at random) who, no longer able to participate, must retire to the rear of the room. Likewise, each time a team answers a question incorrectly, a member of that team must leave the action.

The teams may organize themselves however they wish for the test. As much time as necessary should be set aside for preparation.

Please note that the mathematics of the "test" is weighted. If a class of thirty is divided in half, fifteen and fifteen, then for a team to reach 100 points, it would have to score correct answers 25 times. But assuming the teams are equally divided, no team will reach that mark, because the other group need only score 15 correct answers--60 points--to eliminate it. This, of course, can be modulated by the teacher as s/he sees fit, but should be certain to insure the credibility of the "test."

As in war, our exam will have no victor. Grinding itself out, the absurdity of the test will be clear to most of the students.

At the conclusion of the test, the teacher, beginning the second portion of the learning experience, says that since there is no winning team, another run of the test will be conducted. The students may be already upset, and this will give them something more to think about at home that evening. No one will relish a repeat of the test.

When the next class meeting arrives, the teacher announces that the second test will be different. The groups will remain intact and the team which reaches 100 points will receive A's, only now incorrect answers will not eliminate any team members, correct answers do not eliminate a member of the opposing team and each correct answer scored by one team is scored as four points for the other team.

As before, the teacher permits some of class time, five minutes or so, for the teams to organize themselves anyway they see fit, and to negotiate themselves.

No doubt this second test will go more calmly than the first, perhaps even boringly. Yet everyone participates throughout, and the students feel the alternatives to war; assisting one another in the larger context can assure everyone's success.

Future's Activities Paul Burnim

The following are exercises that we feel may stimulate your students in an anticipatory fashion. Included are some for a variety of age groups. Obviously, we leave it to you to fill in the descriptive and conceptual gaps. However, these have been shown to be effective attention getters, in many situations, over the years.

Creative Activities

1. Write a newspaper of the future. Include cartoons, advertisements, topics for stories and articles.
2. Have the class build a miniature city with all the modern modes of transportation they consider vital.
3. Have the students design and build a mass transit unit of the future and explain why they included what they did.

4. Small group discussion with written consensus on:
 - a. Jobs that women will do in the future that they do not now do.
 - b. Jobs that will no longer be in existence.
 - c. New jobs in the last 10 years.
 - d. Jobs you think will be needed in the future.
5. Consider types of jobs available in the medieval towns. List them. Compare them with jobs of today. Contrast them with jobs of the future.
6. Write a science fiction story on life under the sea, in outer space, or other planets, etc.
7. Dramatize an original science fiction story or one they've read.
8. The children can design a package of a particular food of the future. They can use virtually any material they think appropriate. They should consider factors such as the appropriateness of the package for the product and its disposability.
9. Plan a meal of the future. This can be a simulation experience or an actual cooking experience. Students could plan a menu, secure the foods, and prepare them.
10. Design a school to be built in 1986.
11. Design the house you will buy in 1990.
12. Design a community for 1,000 people.
13. Draw a 1990 map of your community.
14. Write the news program that will describe a day in 1994.
15. Plan a two-week vacation in 1988.
16. Design a community to be built in the Mohave Desert or a jungle area.
17. Create a travel folder, or poster advertising a space trip.
18. Build cardboard structures - experiment with all kinds of geometric shapes. See how high you can go, make different sizes and volumes.
19. Design an amusement park to be built in 1991.
20. Design advertisements that might appear in the year 1993 for a new apartment building, a house, or a restored village.
21. Get some 4M polyethelene and 3M tape #351 or buy it at Sears and put together inflatables. Experiment with different shapes. Use a window fan for your air source. Practice on a small scale first.

22. Make models of all kinds of things: cities, bridges, houses, your classroom, skyscrapers, places of the future, anything that strikes your imagination. Use any materials that fits your purpose; glue, cardboard, chipboard, foam rubber, foamboard, straws, plastic cups, yarn, balsa wood, string, material, thread, surplus, electronic parts, wood shavings, scraps of all kinds, etc.
23. Get some aerial maps from city planning and replan your community using magic markers on the maps.
24. Have each child be some building in the community and place him/herself in relation to other buildings and the environment. Discuss why, where, function of the building, planning and organization of the community.
25. Future 9 or Aquatic 7!!! Would you rather live in an underwater city or an outer space community and why?
26. Creative Writing topics:
 - a. A day in Dome City, U.S.A.
 - b. The House that Recycling Built
 - c. Lunar 85 - the first planned community on the moon
 - d. Where would Abe Lincoln live today?
 - e. Where would Neil Armstrong live tomorrow?
 - f. Why or why not a super canal should be built from New York City to San Diego?
 - g. Write the history of your family beginning in 2004.
 - h. Shall I build my house of Wood, Steel, Paper or Plastic? - The Little Pigs of the future.
 - i. My house is mobile because.....
 - j. How I felt on my first day of school in a space ship.

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Future Studies Program Spring 1976
School of Education
University of Massachusetts, Amherst

Futures

Information Interchange



including:
Toward Tomorrow
Bicentennial Fair
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Consulting

The Future Studies Program has qualified graduate students who are available to schools, non-profit organizations and governments. They will bring educational strategies, audio-visual materials, and curricular materials upon request, terms of employment are negotiable. For further information, contact Jake Plante, Future Studies Program.

* * * * *

The Future Studies Program is searching for interested undergraduate and graduate students for 1977 admissions into the Program. Applicants should apply through the University

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The Futures Information Interchange Newsletter is a collection of practical teaching methods and learning activities for introducing future studies into the classroom. Although the newsletter is directed toward primary and secondary school teachers, it is intended to be of value to educators at the pre-school and university levels also. Unfortunately, due to rising costs, the Futures Information Interchange Newsletter is no longer available free of charge. Beginning with this issue, the FII is available for 50c (which includes postage and handling), with yearly subscriptions available for \$1.00. Contributions to the Newsletter: The newsletter staff welcomes any specific materials related to your future-oriented work in the classroom that you would like to interchange.

Vol. III

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Future Studies Program, 1976



Personal Life-Planning: Expanding the Realm of the Possible



Duane Dale

Introduction

A major goal of future studies education is to enhance the ability of learners to envision new possibilities, decide which are attractive, and implement them. Another way to put this is that we would like to help the learners to become better planners -- planners who are capable of taking the future into account.

This newsletter has, in its brief history, presented a variety of techniques which would enhance student's capacities to think about societal futures -- to do social planning. ("Social planning is too important to leave to the planners"....so runs the argument.) But there is a lesson to be learned from some of the master reading teachers, such as Sylvia Ashton-Warner or Paulo Freire, who have found that when vocabulary words are ones which mean something special in the personal lives of the learners, learning is more rapid. The parallel for futures educators is this: We are liable to increase motivation and improve our effectiveness if we introduce futures methods in connection with content which is most important to the learners: personal futures.

This article presents several exercises which together could provide the core of a unit on personal life planning.

Assessment. Everyone is a planner already. The purpose of this first exercise is to give the students an opportunity to think about how they go about planning.

Writing assignment: Plan a vacation that you would like to take. Where would you go? Who would go with you? What would you bring? How would you get there? What would you do once you got there? How long would you stay? What sort of planning and preparation will you have to do before you leave? What information will you need?

Share papers in groups of three, so that everyone reads two other papers. Then allow each person five minutes to say why s/he chose the vacation s/he did, and how s/he figured out what planning and preparation would be necessary. The two listeners can ask a few questions, like newspaper reporters might, but not too many. They will have their own turn to talk. The teacher keeps time, and follows up with discussion of different goals or values for vacations, and different means of planning.

Futures perspective. Alvin Toffler, in Learning for Tomorrow (New York: Vintage, 1974, \$2.95. pg. 6 ff.), presents an exercise which often confronts the participants with their tendency not to consider likely social futures when they do personal life planning. He asked students to

....help formulate a collective image of the future by writing down on a slip of paper seven events he or she thought likely to occur in the future, and to date these events. (Toffler) avoided saying anything that would restrict the kind of events or their distance into the future.

The results were listed in chronological sequence, with their dates, for all to see. Toffler probed for the assumptions and methods which led to the forecasts. One tendency Toffler observed with several classes was to exclude oneself from the picture -- to give impersonal events. So he asked for a second list of events:

List seven events that will happen to you personally, and give dates for each.

At this point, the students can be asked to compare their two lists, putting all fourteen events in chronological sequence. For each social or impersonal event, ask them to state whether it would affect any of the seven personal futures, and if so, how.

Life Planning. This is the key exercise of the sequence. It can be performed as a writing exercise or a class discussion. Some parts of it can be usefully expanded with sketching, writing of poems, word collages, or other creative approaches. The basic approach can be modified for a wide range of ages.

- Goals: List five things you hope to do or accomplish in your lifetime.
- Priorities: Put a number from one to five beside each, to indicate which is most important, second, etc.
- Preparation: For each event, list what you would need to know, be able to do, or any other preparation necessary.
- Help: What sort of people could help you achieve your goals?
- Time: Give a date for each event, by which you would hope to achieve or complete that activity.
- Problems: List one possible future event for each of the five goals which would make it difficult to achieve the goal.
- Alternatives: For each goal, list two alternatives that would be interesting or attractive to you if you couldn't achieve the original goal.
- First steps: For each original goal, list one thing that you could do within the next year that would be a step toward the goal. Could you take any of these steps within the next week?

Impacts. Within a student's lifetime, it is quite possible that

- a) Petroleum-based fuels will become extremely costly and may, in fact, be virtually exhausted. We will shift to other forms of energy.
- b) Space colonies with 10,000 inhabitants will orbit the earth.
- c) Widespread famines will force world leaders to deal with the problem of overpopulation by placing legal limits on family size.
- d) Other: _____ (invent additional possibilities or use ones from the Toffler exercise.)

Have each student pick one of the five goals from the previous exercise and consider the impact on it of the three possibilities above.

Goal: _____

FUTURE POSSIBILITY	Assume the possibility occurs. What could you do to make it How will it affect your ability more likely for you to to achieve your goal? _____ achieve your goal anyway?
-----------------------	--

a) End of petro-
leum fuels

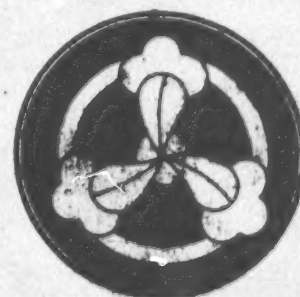
b) Space
colonies

c) Limit on
number of
children

d) Other: _____

These four exercises can provide a stepping-off point for a wide variety of other activities. Scenario writing ("future autobiographies") are one possibility. Another is to reason backward from a future date at which a goal is achieved, so that one develops a list of events with years which lead from the goal back to the present. Values clarification exercises provide a guide to the specification of goals. (See, for example, Values Clarification by Simon, Howe, and Kirschenbaum.) Each teacher will probably want to design additional activities which pursue the student interests stimulated by the four exercises.

If we are going to become better planners -- planners who take the future into account -- it behooves us all to begin with the planning activities over which we have direct control: the planning of our own personal futures.



A Method of Metric Education



Jake Plante

It is forecast that by the year 1985 the United States will have completed its conversion to the metric system of weights and measures. In order for the transition to metrics to be as smooth as possible for people of all ages, major efforts in metric education will be required.

Many efforts in metric education have failed because of their overriding emphasis on the mathematical formulas of conversion. Through his work at the University of Massachusetts, Professor Klaus Schultz has shown that greater learning of metrics occurs when students are encouraged to "think metric." Consequently, a "hands-on" approach to metric education in which students are given the opportunity to experiment with metric rulers, tapes, balances, scales, liquid containers, etc. is strongly recommended.

Introducing Metrics to Your Class

After collecting or constructing the metric materials (you or your class can easily make many of them yourself), spread them out in your classroom and invite students to spend some time investigating the materials. (E.g., have students weigh various kitchen articles on a metric balance and compare their readings.) When they feel relatively comfortable with the scales and measures, you might ask them to break into small groups and attempt the following tasks:

- | | <u>Metric Equivalent</u> |
|---|-----------------------------|
| 1. If you went into a "metric" clothing store to buy a pair of pants, what size would you order? | centimeters,
millimeters |
| 2. How much do you weigh? What if you went on a diet and lost 10 lbs.? | grams, kilograms |
| 3. How tall are you? | decimeters |
| 4. What is the length of the classroom floor? | meters |
| 5. Measure the volume of a large glass of water? | liters, milliliters |
| 6. Develop a game of metric estimation that all can play. | |
| 7. Discuss the effects of metrication on our language and culture. What would happen to expressions such as "It hit me like a ton of bricks." And "The old mule wouldn't budge an inch." Cite other examples. | |
| 8. Devise a metric system of telling time. What would be its advantages? Its drawbacks? | |

If your students are going to "think metric," it is important that they be continually exposed to the metric system. Therefore, after you have presented a lesson or unit in metrics be sure to leave these resources in the classroom for further investigation and use by students.

Information and Resources

Distributor - Edmund Scientific Co., 652 Edscorp Building, Barrington, N.J. 08007.

Information - Dr. Klaus Schultz, School of Education, University of Massachusetts. (Dr. Schultz has recently received a grant for metric education from the New England Regional Commission.)

Other Resources - food product labeling, road signs and tools.

Curriculum Development in Future Studies



Cindy Guy

Many schools seem to be entering an era of increased accountability and what appears to be a return to more basic skills-orientated curricula. It is not always easy to introduce areas such as "the future" (which many schools envision as too abstract and amorphous) into this academic climate.

This article shows how a teacher can develop future-oriented curricula while at the same time following an orderly, easy to understand procedure. In order to show this process I have followed the traditional steps developed by the grandfather of curriculum and instruction, Ralph Tyler. My intent is not to go into detail about the various steps but to show that such a process can be used as a guide by future-oriented teachers, especially when faced with questions dealing with the relevance of teaching about the future. I would recommend that readers consult Tyler's book, Basic Principles of Curriculum and Instruction, if they wish a further explanation of his curriculum process.

In the example that follows, hypothetical and randomly selected data has been created relating to students in an elementary school. Data could be gathered from a variety of sources; the community, the school, individual teachers, etc. A fifth grade teacher has used it in order to generate future-oriented curricula ending with the specific learning opportunities to be used with the students. The chart that follows represents a small segment of curricula and the suggestions in each column are examples and not to be thought of as complete. The reader should also be reminded that the curriculum developer, here the teacher, must be concerned with various aspects of the curriculum organization. Is there continuity, sequence and integration of the curricula with the other learning going on in the classroom and school?

The chart should be read in order, I-VII.

I - DATA

II - GENERALIZATION

III - INFERENCE

A. Of the 30% of teachers dealing with environmental studies, only 2% include future issues in their curriculum.

A. Only a fraction of students in the school deal with future issues through their environmental instruction.

A. More students need experiences dealing with the future in their environmental ed. instruction.

B. Following the questionnaire, the 45% indicating a poor self image coincided with a closed/fixed/pre-determined attitude about the future.

B. Image of self is directly related to perceptions about the future.

B. Experiences needed to help a large number of students improve self image.

C. Only 4 of 25 students listed options for using leisure time in 5 years that were not directly harmful to the environment.

C. Large majority of students unable to envision leisure time in ways not directly harmful to the environment.

C. Need to discover other options for spending free time.

IV - INSTITUTIONAL GOALS

V - INSTRUCTIONAL OBJECTIVES

VI - *TYPE

A. To create learning opportunities in environmental ed. that also focus on the future.

1. to identify issues that students see as future concerns.
2. to rate these by degree as affecting them personally.
3. to identify issues from #2 where they could affect their course.

1. cognitive/selection
2. cognitive/analysis
3. cognitive/selection and analysis

B. To create more learning opportunities that help students gain positive self images.

1. to identify areas where different students can achieve a measure of success.
2. to have students teach other students in an area of competence.
3. to expand images of the future.

1. cognitive/selection
2. cognitive/teach
3. affective/awareness; imagery

C. To create learning experiences during free periods which make use of human resources.

1. to expand images of leisure time.
2. to identify free time activities of interest not harmful to the environment.
3. to partake of activities not harmful to the environment.
4. to create options for continuing one of these activities into the future.

1. affective/awareness; imagery
2. cognitive/selection
3. affective/choice
4. affective/awareness; options

*See Benjamin Bloom, ed., Taxonomy of Educational Objectives: Handbook I: Cognitive Domain. New York, David McKay Co., Inc., 1956.

VII - INSTITUTIONAL LEARNING
OPPORTUNITY

VIII - INSTRUCTIONAL LEARNING
OPPORTUNITY

A. Students participate in two seminars per week dealing with 'The Future' simultaneously while taking environmental studies.

1. Working in small groups list as many issues as possible that you see as future concerns.
2. On individual lists rate these as affecting you personally, #1 being that which you think could affect you the most, etc.
3. Underline the issues from your list that you think you could have a real part in altering the course.

B. Students attend seminar once a week during social studies period called 'Self Discovery.'

1. List at least ten activities you have done in or out of school in the past year that you have enjoyed.
2. Underline the items from #1 that you think you would enjoy doing more of in the future.
3. Circle the items which you think you would be good at sharing with others.
4. Check the items you could show someone during the term and put an X next to the ones you don't wish to share.
5. List the items you think you would put on a list in five years.

C. Students spend one elective period per week in planning for class tentatively called 'Leisure time and the Environment,' to take place next term.

1. In groups of four, using the blank cards, list all the activities you enjoy doing during your 'free time.'
2. Place a check on all the cards which your group feels are not overly harmful to the environment.
3. Each person select a card of interest from the group in #3.
4. Write a one-page scenario about you doing this activity at some date in the future which your group has agreed upon.

An extremely important part of the curriculum process is evaluation. This can take place at different times during or after implementation of the curriculum. The feedback from evaluation enables students and teachers, working together, to improve the curriculum as well as to help discover specific areas that are weak. An example of the evaluation that could be used with one of the instructional objectives follows.

Evaluation process for instructional objective, 'to expand images of the future.'

- a. Specification of behavior and content of objective:
 - 'expand' - increase; add to
 - 'images' - likeliness; appearances; sight
 - 'future' - time to come; hereafter
- b. Setting:

Students are given a list of favorable societal futures taken from an earlier brainstorming session. Each student selects one future and is

asked to list as many possible ways they can imagine where they might input in the future so that it might come to pass.

- c. Recording:
Teacher checks items for plausibility, imaginativeness and numbers.
- d. Scoring:
Teacher adds items considering criteria in 'c.'
- e. Summary of data:
1 - 5 = poor imagery
6 - 10 = average
11 - over = well developed sense of imagery.
- f. Sharing of findings:
Papers are returned with comments; the information from summary is kept for the teacher's records. A plus is indicated on the papers where there has been an increase of items over a pretest of the same nature given earlier in the unit. A discussion follows concerning the return of papers. Individual conferences are held with the teacher if student or teacher requests one.
- g. Recycling and alterations:
On the basis of the returned papers and discussion, issues might have been brought up concerning test reliability since several criteria were looked for. Perhaps further subdivision are needed so that it will be easier to determine more precisely where student and curriculum weaknesses are.

There are many ways to develop curricula; I have included but one form. The Tyler model is a very linear, deductive process which was included here because it is easily adaptable and flexible and offers a good foundation for any number of curriculum tasks. This might include anything from interpreting data to the sharing of lesson plans with a questioning parent. This is especially important for curricular areas that are relatively new, such as future studies, and also for those that were not intended to be neatly packaged into the existing slots used to describe the program of studies at most schools.



April, 1976

Dear Subscriber,

Thank you for your continued support and interest in the Futures Information Interchange Newsletter.

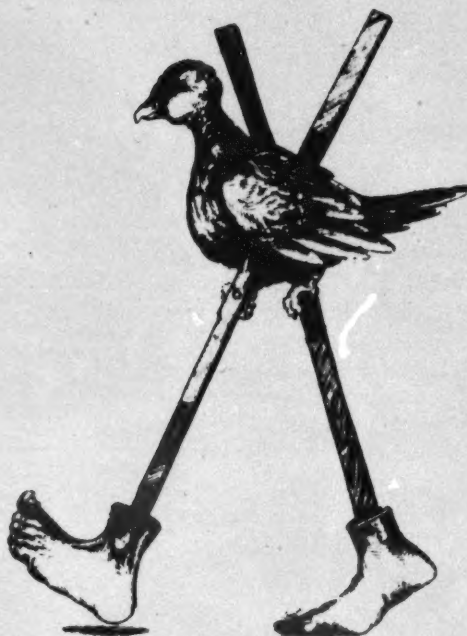
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Cordially,

Julia A. Smith
Julia A. Smith
Future Studies Program

JAS/cv





Toward Tomorrow in Bicentennial America: Choices for Our Third Century

1776
1876
1976
2076

200 Hills North, University of Massachusetts, Amherst, Ma. 01002

Working wind generators and solar collectors, electric autos, portable shelters and other innovative technologies will be displayed this summer on the campus of the University of Massachusetts/Amherst during its Toward Tomorrow Fair. Two hundred environment, education, business, consumer and research groups will have exhibit booths on the Toward Tomorrow Fairgrounds to present their ideas and programs for America's third century.

A large audience - 15,000 - is expected during the event, the only gathering of its kind in New England, this Bicentennial summer.

Toward Tomorrow is designed to showcase the wide range of social and technological options available to the nation as it celebrates its Bicentennial. The Fair will be held June 26 - 27, 1976.

Along with the displays and booths, free musical and theatrical performances, food concessions, an old style speaker's stump and children's play areas will be on the fairgrounds. Inside the adjacent Lincoln Campus Center, workshops, speeches, panels and debates will be on-going through Saturday and Sunday. A movie theatre will continuously screen films on environmental, energy, consumer, communication and transportation issues.

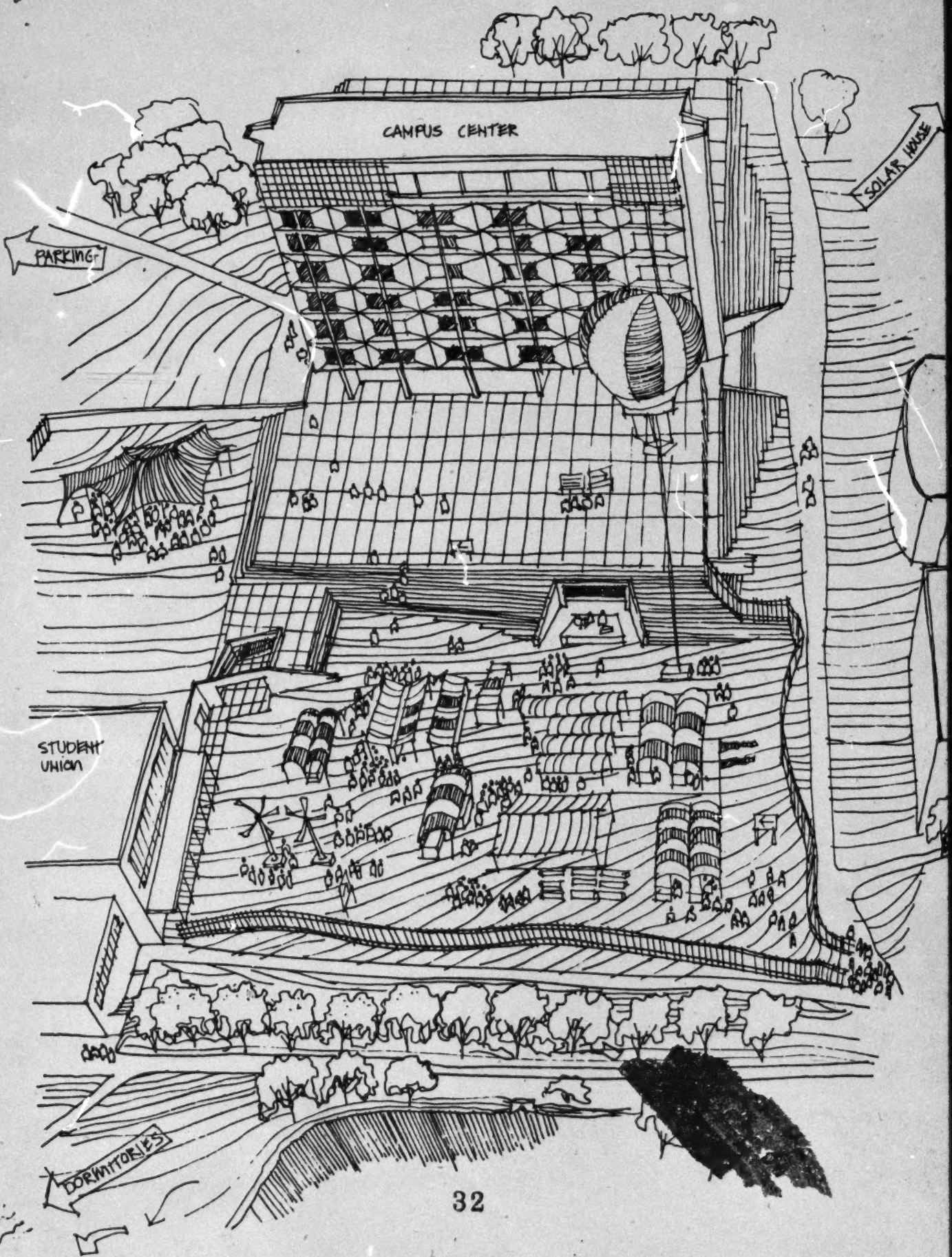
Major addresses are planned by renown Americans over the two days. Futurists Herman Kahn and Robert Theobald, consumer advocate Ralph Nader, New Hampshire Governor Meldrim Thompson will speak. WHOLE EARTH CATALOG editor Stewart Brand, People's Party presidential candidate Margaret White and farmer-authors Helen and Scott Nearing will also speak at the Fair. Other individuals of similar stature will be attending.

A single daily ticket price of \$3.00 will allow one admission to the fairgrounds and indoor activities. Special discounts for students, people under 16 or over 65 will be available.

University of Massachusetts dormitory rooms are available for lodging during the Fair for \$5.25 per night.

The Toward Tomorrow Fair immediately follows the two-day professional conference of the New England Solar Energy Association and the Convocation of Massachusetts Tomorrow. Both groups will be participating in the Fair.

ARBA, the federal government's American Revolution Bicentennial Administration has officially recognized Toward Tomorrow.





Susan Carpenter

Simulation games may be useful tools for learning about the future. Simulation games combine the elements of a simulation, a model of a physical or social situation, with the elements of a game, usually a contest between opponents for an objective controlled by rules. Simulation games offer learners opportunities to examine issues, problems and possibilities which will affect their lives at the community and global level over the coming years. In addition, players may assume realistic roles, acquire facts and concepts, experience the dynamic interrelationship within and between issues, see issues from different points of view, formulate alternatives, make decisions, and in some cases negotiate solutions and get fast evaluation on the consequences of their actions. All of these possible learnings contribute to the development of skills for coping with situations of tomorrow.

Simulation games may be used as motivational activities to introduce a unit of study; they may be used to reinforce facts, concepts and skills learned by other means; they may be offered as supplementary materials to expand learnings in one area; or they may be used to show the relationships between areas which were previously studied independently.

While there are very few published simulation games which teach about the future, students may consider futurizing existing games or creating their own. The process of restructuring or creating a game can be a more powerful learning experience than the actual playing of the game. To futurize a game students may select an existing game and by changing one or more dimension of the game, shift its focus to the future. For example, students could:

- futurize the environment by redesigning the game's board to represent a more likely future setting;
- futurize the choices and chances offered to players through a change in the rules or the opportunity or chance cards;
- futurize each player's specific objectives, values and behaviors by more accurately reflecting possible or desirable personal goals and appropriate values and behaviors in the future;
- futurize rewards and punishments by considering forms of behavior which will most likely receive praise and criticism in the future.

- futurize goals by determining what might be desirable objectives for the future time span you have agreed to work with.
- futurize the means by considering what means will be available and desirable for obtaining one's goal.

Designing Your Own Future's Simulation Game

Students may wish to design their own game. It is helpful to play a few existing games first, such as Dirty Water, Pollution, Smog or Ecology, to get an idea of the variety of ways games may be structured. Here are some basic steps students can follow to design their own future's simulation game:

1. Determine the objectives for the simulation game. What would you like the game to teach? Around what issues will the game be built?
2. Determine the scope of the game. What are the limits to your physical or social situation? (It is important that your limits be both simple and significant to be a useful learning tool.)
3. Establish the major roles. Decide what types of players would be appropriate to include in your simulation. What players would be involved in the issues in your situation?
4. Establish each player's resources. What skills, knowledge, rights, privileges and finances does each player possess at the beginning of the game?
5. Determine each player's specific objective. What are the direct and hidden agendas of each player? What concerns does he or she have about the other players' lives?
6. Establish rules for interaction between players. Who can do what kind of activity? When can activities be done? Where can activities be done? Can certain people do things together and others not? How do privileges and rights affect interactions? How do you determine who acts at a particular time? Are there any consequences for moving to certain parts of the simulated environment?
7. Identify external constraints on the players. External constraints should be based on possible constraints which might exist in real situations. These may be built into the design of the board as squares which demand certain behavior (pay \$200 for pollution clean up) or squares which require you to draw a chance card (sharing the ownership of a car collect \$400). Simulations without boards may specify constraints in the beginning of the game or may add constraints as the game progresses.
8. Establish scoring rules or win criteria (if appropriate). How would players accumulate points? How might players lose points? How can a person win? Can more than one person win? Sometimes this is done with money, sometimes by trading possessions, skills or privileges.
9. Establish a setting which best reflects a potential reality for your game. The setting may be visually presented on a board where squares represent different areas or events in the setting or the setting may be described in the beginning of the game to be assumed throughout the rest of the play.

Here are a few extra suggestions for making a good game:

1. The rules or explanations of the dynamics of the game must be clear.
2. Choices and chances are important elements to include in any simulation game. The percentage of choice and chances should be related to the percentage of choices and chances that would be found in your future situation.
3. Simulation games should encourage imaginative thinking, offer opportunities

to create alternatives and to take risks.

4. The learning value of the game should not be given away in the rules of the game. If everything is understood in the explanation, it will not be worth playing. Games should contain "ah-ha" opportunities for the players to gain new insights and understandings.

5. Simulation games should provide opportunities throughout the game for players to get feedback on the operation of the physical or social setting and feedback on the consequence of each player's specific actions.

6. Humor and imagination add more interest to the game. Players may be named after salient aspects of the character, as Eric Eco and Ernie Effluent. Character descriptions should be rich enough so that individuals will be interested in assuming the role and will enjoy playing the game. Also, one may want to structure new dimensions to be added to the process of playing throughout the game. These may appear in the form of new flashes on the board or special conditions cards drawn from a pile.

7. Simulation games should be replayable. If there are enough variables in the game, there will be no set outcome. Each time the game is played individuals have an opportunity to gain new understandings. Learnings from one playing of the game should be applicable to future playings.

Final Comments

It is important to have good resources readily available or to provide enough time for students to locate their own sources of information. Many important questions can get raised in the course of designing a game. The more adequate the resources the more extensive the learning possibilities become.

I have found small groups of four to five students seemed to maximize both individual participation and an exchange of ideas. Students found the process of developing a game extremely challenging. They commented on how much they needed to draw on a wide range of resources, how much they had to consider what reality might really be like and how much they had to think in terms of whole systems. It was apparent that the students had been immersed in some good future's thinking.

For more information on simulation games in general see:

Abt, Clark C., Serious Games. New York: Viking Press, 1970.

Boocock, Sarane S. and Schild, E.O., (eds), Simulation Games in Learning. Beverly Hills: Sage Publications, Inc., 1968.

Inbar, Michael and Stroll, Clarice S., Simulation and Gaming in the Social Science. New York: The Free Press, 1972.

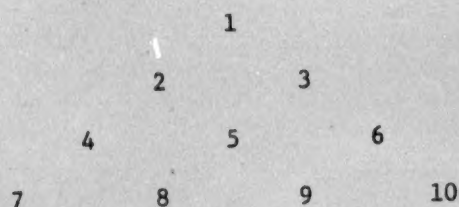
Nesbitt, William, "Simulation Games for the Social Studies Classroom."

The Extrapolation Pyramid

Pierre L. Marchando

Within a formally-structured classroom students need imaginative material that can help them to use their creative abilities. When presenting a curriculum unit to the class, it is often difficult to get maximum participation from the students. The aim of the extrapolation pyramid is to provide such a stimulus for maximum class participation.

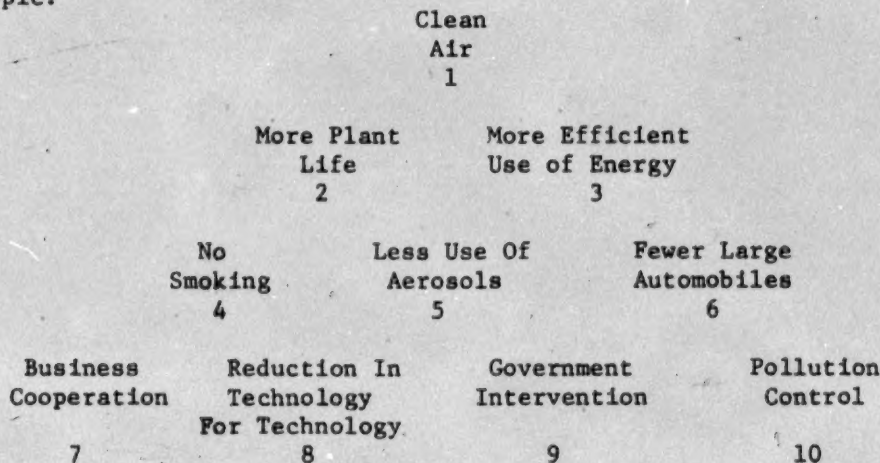
Occasionally, a visual group participatory exercise is the tool that can provide the stimulus for good solid class discussion. Many students desire to visualize progress toward a goal in a curriculum unit. The extrapolation pyramid provides such a visible means of actually viewing the progress toward a structured learning goal.



The Pyramid
(Illus. 1)

The pyramid is an extrapolation tool. An extrapolation tool is a device that allows us to delineate a particular problem or situation into finely structured, finely defined sub-units (2-10). The second order process of defining each sub-unit helps us to see more clearly the relationships between sub-units and the topic (1).

The pyramid can be a great help in fostering classroom discussion (at a relatively sophisticated level on a selected topic. It aids the class learning process, allowing students to actually see their work laid out in a comprehensible whole. The pyramid's grid also allows the students to view all variables being considered and the relations between these variables and the main topic.



Building the Pyramid
(Illus. 2)

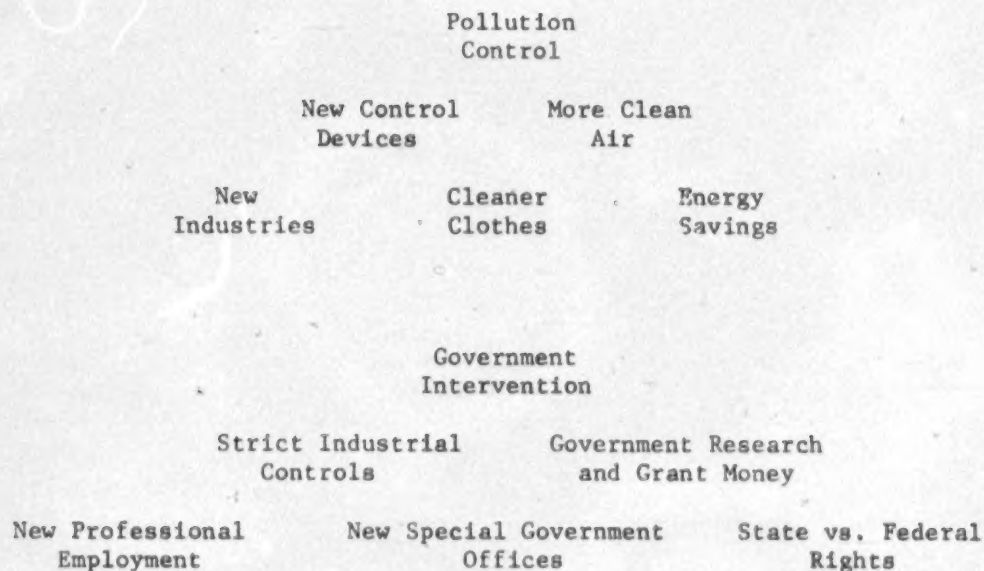
Unlike conventional architectural practices, the extrapolation pyramid is built from the top down (Illus. 1). Our topic for extrapolation is placed in block one (Illus. 2 - Clean Air), all other variables related to the main topic are placed in blocks two through ten. (Note: This particular structure, Illus. 2, is what is known as a four tier pyramid, because there are four levels of blocks that will be extrapolated. The recommended size of the pyramid is at least three to four tiers. Once we start to use more than four tiers, we get into a much longer learning experience.)

The pyramid is used in this manner:

- I. A main topic is chosen (Illus. 2)
- II. A brainstorming process occurs which lists variables that the class can conceive as related to the main topic.
- III. Depending on class size and time available, the list of variables is reduced to a workable number. This can be done by using a cross-impact matrix* or by random exclusion (random exclusion involves eliminating variables by class consensus, i.e., vote, mutual agreement, impact assessment).
- IV. Each variable is then extrapolated to investigate the impacts involved within it. A two or three tier pyramid is useful to extrapolate these variables (Illus. 3). This portion of the exercise is particularly helpful because it allows the student to get a better grasp of all the variables and implications involved with arriving at the topic goal.
- V. After each block or variable has been explored, the teacher may want to use a cross impact matrix to measure the impacts of the different variables upon one another. This procedure need not be followed, however. The variables can simply be placed in the boxes in a descendent order that could be, as previously mentioned, arrived at by mutual consent or class vote.
- VI. The boxes can now be filled and the pyramid discussed.
- VII. Discussion of the pyramid should be directed toward attaining the particular goal that the class has chosen. The discussion best proceeds systematically.
- VIII. The question, "How can we enforce or guarantee pollution control?" is asked. This question should invoke a lot of discussion of the possible variables relevant to pollution control.
- IX. As the variables are listed, the question, "How does this relate to pollution control?" should be asked of each variable. A series of rationale for the specific variable (Pollution Control) in question will come from the class.
- X. Still another question should be asked at this point, "How strong an effect does this 'controlling' variable have on pollution control?"
- XI. After this process is repeated for each box, the students will have a better understanding for how the variables relate to the topic question of "How do we get more clean air?"

After completing the pyramid, discussion of the plausibility of various solutions presented should ensue. The teacher can then summarize the exercise, being sure to point out the end similarities or impacts of the variables on the topic in question.

*Jake Plante, "The Cross Impact Matrix," Futures Information Interchange, December, 1975, p. 4.



(Illus. 3)

Erratum

In the last issue of FII, the article "Teaching Future Concepts" was erroneously attributed to Allan Peakes. In actuality, it is a precis which Mr. Peakes prepared of an exercise developed by Dr. Draper Kauffman. Dr Kauffman, who currently directs the MAT program in Future Studies at Webster College, in St. Louis, Missouri, presents this idea and many others of interest to teachers and budding futurists alike in his new book, Teaching the Future. It is available for \$5.95 (paper) or \$12.95 (cloth) from ETC Publications, Dept. 1627-A, Palm Springs, CA 92262.

To avoid problems which might arise if the article were to be further quoted or copied with the wrong attribution, we request that you detach the statement below and staple or tape it securely to page 11 of the December 1975 issue of FII.

The article "Teaching Futures Concepts" is a precis of material in the book Teaching the Future, C Draper L. Kauffman, Jr., 1975, 1976. It may not be reproduced in any form without permission of the author.